

5 light and accumulating the charge for a predetermined  
6 period of time;  
7 a vertical transfer unit for vertically transferring  
8 charge from the pixels in the pixel unit, a horizontal  
9 transfer unit for horizontally transferring charge from the  
10 vertical transfer unit;  
11 shift gates each provided between each pixel and the  
12 vertical transfer unit for reading out the charge in the  
13 pixels to the vertical transfer unit, gate electrodes for  
14 controlling the shift gates; and  
15 a plurality of lead lines and a plurality of  
16 connection terminals for connecting the gate electrodes to  
17 an external circuit,  
18 gate control lines connected to gate electrode groups  
19 in which horizontal lines belonging to each coset of modulo  
20  $N$  within successive pixel rows are connected commonly,  $N$   
21 being a predetermined natural number between 4 and one half  
22 the number of pixels in a column, and also being a minimum  
23 number corresponding to a periodic unit of gate electrode  
24 connections to said connection terminals within said  
25 successive pixel rows, being combined with each other so as  
26 to reduce the number of the connection terminals to less  
27 than  $N$ .

Please replace claim 3 with the following:

1 3. (TWICE AMENDED) A solid-state imaging device  
2 comprising:  
3 a pixel unit constituted by a two-dimensional array of  
4 pixels for generating charge in correspondence to received  
5 light and accumulating the charge for a predetermined  
6 period of time;

7 a vertical transfer unit for vertically transferring  
8 charge from the pixels in the pixel unit, a horizontal  
9 transfer unit for horizontally transferring charge from the  
10 vertical transfer unit;

11 shift gates each provided between each pixel and the  
12 vertical transfer unit for reading out the charge in the  
13 pixels to the vertical transfer unit, gate electrodes for  
14 controlling the shift gates; and

15 a plurality of lead lines and a plurality of  
16 connection terminals for connecting the gate electrodes to  
17 an external circuit,

18 the gate electrodes being provided in a predetermined  
19 number N of gate electrode groups such that horizontal line  
20 number of the gate electrode groups which are connected to  
21 respective common lead lines belong to each same residue  
22 class of modulo N, N being a predetermined natural number  
23 between 4 and one half the number of pixels in a column,  
24 and also being a minimum number corresponding to the  
25 periodic unit about connections to said connection  
26 terminals within said successive pixel rows, some of the  
27 gate electrode groups being commonly connected so that the  
28 connection terminals are less in number than N.

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cont  
Please replace claim 4 with the following:

1 4. (TWICE AMENDED) A solid-state imaging device  
2 comprising:

3 a pixel unit constituted by a two-dimensional array of  
4 pixels for generating charge in correspondence to received  
5 light and accumulating the charge for a predetermined  
6 period of time;

7 a vertical transfer unit for vertically transferring  
8 charge from the pixels in the pixel unit, a horizontal  
9 transfer unit for horizontally transferring charge from the  
10 vertical transfer unit;

11 shift gates each provided between each pixel and the  
12 vertical transfer unit for reading out the charge in the  
13 pixels to the vertical transfer unit, gate electrodes for  
14 controlling the shift gates;

15 and a plurality of lead lines and a plurality of  
16 connection terminals for connecting the gate electrodes to  
17 an external circuit,

18 the gate electrodes making up N of gate electrode  
19 groups in which the lines belonging to each coset of modulo  
20 N within successive pixel rows are connected to common lead  
21 lines, N being a predetermined natural number between 4 and  
22 one half the number of pixels in a column, and also being a  
23 minimum number corresponding to a periodic unit of gate  
24 electrode connections to said connection terminals within  
25 said successive pixel rows, the gate electrode groups  
26 having common connections to reduce the number of the  
27 connection terminals to less than N,

28 wherein the commonly connected gate electrode groups  
29 are always controlled in the same way in each of all  
30 predetermined read-out modes including selective pixel  
31 read-out modes by selective shift gate driving.

Please replace claim 5 with the following:

1 5. (TWICE AMENDED) A solid-state imaging device  
2 comprising:

3 a pixel unit constituted by a two-dimensional array of  
4 pixels for generating charge in correspondence to received  
5 light and accumulating the charge for a predetermined  
6 period of time;

7 a vertical transfer unit for vertically transferring  
8 charge from the pixels in the pixel unit, a horizontal  
9 transfer unit for horizontally transferring charge from the  
10 vertical transfer unit;

11 shift gates each provided between each pixel and the  
12 vertical transfer unit for reading out the charge in the  
13 pixels to the vertical transfer unit, gate electrodes for  
14 controlling the shift gates; and

15 a plurality of lead lines and a plurality of  
16 connection terminals for connecting the gate electrodes to  
17 an external circuit,

18 gate control lines connected to gate electrode groups  
19 in which the horizontal lines belonging to each coset of  
20 modulo  $N$  within successive pixel rows are connected  
21 commonly,  $N$  being a predetermined natural number between 4  
22 and one half the number of pixels in a column, and also  
23 being a minimum number corresponding to a periodic unit of  
24 gate electrode connections to said connection terminals  
25 within said successive pixel rows, being combined with each  
26 other so as to reduce the number of the connection  
27 terminals to less than  $N$ ,

28 wherein the commonly connected gate electrode groups  
29 are always controlled in the same way in each of all  
30 predetermined read-out modes including selective pixel  
31 read-out modes by selective shift gate driving.

Please replace claim 6 with the following:

1 6. (TWICE AMENDED) A solid-state imaging device  
2 comprising:

3 a pixel unit constituted by a two-dimensional array of  
4 pixels for generating charge in correspondence to received  
5 light and accumulating the charge for a predetermined  
6 period of time;

7 a vertical transfer unit for vertically transferring  
8 charge from the pixels in the pixel unit, a horizontal  
9 transfer unit for horizontally transferring charge from the  
10 vertical transfer unit;

11 shift gates each provided between each pixel and the  
12 vertical transfer unit for reading out the charge in the  
13 pixels to the vertical transfer unit, gate electrodes for  
14 controlling the shift gates; and

15 a plurality of lead lines and a plurality of  
16 connection terminals for connecting the gate electrodes to  
17 an external circuit,

18 the gate electrodes being provided in a predetermined  
19 number N of gate electrode groups such that horizontal line  
20 number of the gate electrode groups which are connected to  
21 respective common lead lines belong to each same residue  
22 class of modulo N, N being a predetermined natural number  
23 between 4 and one half the number of pixels in a column,  
24 and also being a minimum number corresponding to the  
25 periodic unit about connections to said connection  
26 terminals within successive pixel rows, some of the gate  
27 electrode groups being commonly connected so that the  
28 connection terminals are less in number than N,

29 wherein the commonly connected gate electrode groups  
30 are always controlled in the same way in each of all  
31 predetermined read-out modes including selective pixel  
32 read-out modes by selective shift gate driving.

Please cancel claim ~~10~~ without prejudice to, or disclaimer of, the subject matter recited therein.

Please add the following new claim:

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D1

--11. (NEW) A solid-state imaging device comprising:

- a two-dimensional array of pixels for generating charge in correspondence to received light and accumulating the charge for a predetermined period of time;
- a vertical transfer unit for vertically transferring charge from the pixels in the pixel unit;
- shift gates each provided between each pixel and the vertical transfer unit for reading out the charge in the pixels to the vertical transfer unit, and a plurality of R gate electrodes for controlling the shift gates; and
- a plurality of lead lines and a plurality of connection terminals for connecting the gate electrodes to an external circuit,

cancel

- wherein the R gate electrodes are divided into S gate groups, each gate group having R/S gate electrodes,
- wherein the R gate electrodes are divided into R/S pixel groups, each having R/(R/S) consecutive, adjacent, gate electrodes,
- wherein the  $i^{\text{th}}$  gate electrode of each pixel group, where  $i = 1$  to  $R/(R/S)$ , share a common connection terminal, and
- wherein at least two gate electrodes within a given pixel group share a common connection terminal.--

In accordance with 37 C.F.R. § 1.121(c)(1)(ii), separate sheets with the rewritten claims marked-up to show